REMARKS

Claims 4, 5 and 10-25 are in this application and are presented for consideration. By this amendment, Applicant has amended claims 4, 5 and 14. Claims 1-3 and 6-9 have been canceled and new claims 20-25 have been added.

Claims 1, 6 and 7 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Volas et al. (U.S. 6,019,812) in view of Choudhury et al. (U.S. 2003/0010472 A1).

Applicant notes that Choudhury et al. has a filing date of June 14, 2002, but is a continuation of abandoned application 09/443,195, which was filed on November 15, 1999. Applicant respectfully requests that the Examiner review the issue of whether the disclosure of Choudhury et al. is the same as the disclosure of application 09/443,195 such that Choudhury et al. is entitled to the filing date of November 15, 1999.

Applicant wishes to note that the corresponding European patent for the present invention has been issued as EP 1 444 065 B1. The present invention relates to a method for producing metallic and intermetallic alloy ingots that have a high homogeneity and a low porosity. The ingots are produced by producing electrodes from starting materials. The electrodes are remelted at least once in a remelting process. The remelted electrodes are melted in a high frequency coil or in a cold crucible plasma furnace. The molten material is homogenized in a cold wall induction crucible. In the invention, the cold wall induction crucible loses its principle prior art function, namely melting material that is always supplied to the crucible in a solid state. Providing the material to the crucible in a liquid state advantageously prevents segregation phenomena, which provides inhomogeneities of the final material and are

always observed when solid alloys of multiface structure are melted in the cold wall induction crucible. Applicant has surprisingly found that melting of the electrode material that serves for the production of metallic and intermetallic alloy ingots and supplying the molten material to the cold wall induction crucible provides an extremely high homogenization of the material. This advantageously provides a highly homogeneous material that would normally require a great number of remelting steps using a conventional method. The present invention advantageously provides a material with a high homogeneity and low porosity that is less complicated and less costly compared with conventional techniques. The prior art as a whole fails to disclose such features and such cost reducing advantages.

Volas et al. discloses a method of producing a titanium ingot in which raw bulk material 12 is fed into a first melting hearth 20. The first melting hearth 20 is energized by a plasma torch 18. The first hearth is followed by two refining hearths 22 and 26. The first refining hearth 22 is energized by a plasma torch 24. The second refining hearth is energized by a plasma torch 28. The second refining hearth 26 is followed by an ingot mold 30 which is energized for melting the material by another plasma torch 32.

Choudhury et al. discloses a first cold wall induction furnace arrangement and a second cold wall induction furnace arrangement. The basic alloy ingredients are mixed together in the first cold wall induction furnace arrangement such that a solidified block of the alloy components is formed. The block formed in the first cold wall induction furnace arrangement is then melted down in the second cold wall furnace arrangement.

Volas et al. and Choudhury et al. fail to teach and fail to suggest the combination of a

cold wall induction crucible that is supplied with a pre-homogenized molten material. At most, Volas et al. discloses a complicated quadrangular arrangement of melting hearths and Choudhury et al. discloses a block of material that is formed in one furnace arrangement, which is then melted in another furnace arrangement. However, both references do not disclose a cold wall induction crucible that receives a pre-homogenized molten material as claimed. In contrast to Volas et al. and Choudhury et al., the cold wall induction crucible is supplied with a pre-homogenized molten material. This advantageously prevents segregation phenomena, which occurs when solid alloys are melted in the cold wall induction crucible. Compared with the present invention, Volas et al. and Choudhury et al. only direct the person of ordinary skill in the art toward feeding a cold wall induction furnace with melting materials that are in solid form. This disadvantageously provides a final material that is extremely inhomogeneous. Volas et al. and Choudhury et al. only disclose melting hearths and furnace arrangements that receive solid materials but fails to provide any teaching or suggestion for feeding a cold wall induction crucible with molten material as featured in the present invention. As such, the prior art as a whole takes a different approach and fails to disclose each feature of the claimed combination. Accordingly, Applicant respectfully requests that the Examiner favorably consider claims 4 and 5 as now presented and all claims that respectively depend thereon.

Claims 2 and 3 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Volas et al. in view of Choudhury et al., in further view of Guther (1) (V. Guther et al. Processing of Gamma TiAl based ingots and their characterization. Gamma Titanium Aluminides, The Minerals, Metals and Materials Society, 1999, p. 225-230).

Applicant has canceled claims 2 and 3.

Claim 4 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Volas et al. in view of Choudhury et al., in further view of Guther (2) (V. Guther et al. Recent Improvements in γ - TiAl ingot metallurgy. 11th AeroMat 2000, June 27, 2000: Seattle, WA) and Gerling (DE 19631583).

As previously discussed, Volas et al. and Choudhury et al. fail to teach or suggest the combination of a final homogenization and ingot withdrawal step from a cold wall induction crucible which is supplied with a pre-homogenized molten material. Guther (2) and Gerling also fail to provide any teaching or suggestion for the combination of a cold wall induction crucible that receives a pre-homogenized molten material. Gerling merely discloses alloy ingredients that are melted by an induction coil. However, Gerling fails to disclose that the powdery metals titanium, aluminum and niobium are pre-homogenized or melted in a cold wall induction crucible as featured in the claimed combination. Guther (2) discloses pressing electrodes and pre-homogenizing the electrodes in a first vacuum arc remelting (VAR) step and a second VAR step. Guther (2) then provides three alternatives (page 11 of Guther (2)) for the final homogenizing step, which includes a third VAR step or a plasma arch cold hearth melting or a plasma arch scull melting (page 12 of Guther (2)). However, Guther (2) is completely void of any mention of a final homogenizing step and withdrawal step in a cold wall induction crucible which is supplied with a pre-homogenized material in a molten state as claimed. As such, the prior art as a whole takes a different approach and fails to direct the person of ordinary skill in the art toward each feature of the claimed combination. Accordingly, Applicant

respectfully requests that the Examiner favorably consider claim 4 as now presented and all claims that depend thereon.

Claim 5 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Volas et al. in view of Choudhury et al., in further view of Guther (2).

As already discussed above, Volas et al., Choudhury et al. and Guther (2) fail to provide any teaching or suggestion for the combination of a final homogenization and ingot withdrawal step from a cold wall induction crucible which receives a pre-homogenizing molten material. As such, all claims define over the prior art as a whole.

Applicant has added new claims 20-25. New independent claim 20 provides for method steps similar to those found in claim 4, but in different claim language. New dependent claims 21-25 are based on new independent claim 20 and have been added to further clarify the features of the invention. Applicant respectfully requests that the Examiner favorably consider new claims 20-25.

Favorable action on the merits is requested.

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Attached: Petition for One Month Extension of Time

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SHOULD ANY OTHER FEE BE REQUIRED, THE PATENT AND TRADEMARK OFFICE IS HEREBY REQUESTED TO CHARGE SUCH FEE TO OUR DEPOSIT ACCOUNT 13-0410.